

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1-7. (CANCELED)

8. (NEW) A system comprising:

a scanning device;

a first plate module configured to couple to the scanning device at a known orientation, the first plate module also configured to receive a first physical model of a first dentition of a patient and to position the first physical model within a first coordinate system, the first plate module including a plurality of alignment spheres arranged on the first plate module; and

a second plate module configured to receive a second physical model of a second dentition of the patient and to position the second physical model within a second coordinate system, the second plate module including a plurality of alignment spheres, the second plate module configured to couple to the scanning device at a known orientation;

wherein the second plate module is configured to operably couple to the first plate module using an articulation device to form a combined apparatus within the first coordinate system, the second plate module being moveable with respect to the first plate module when forming the combined apparatus, and wherein the combined apparatus can be coupled to the scanning device.

9. (NEW) The system of claim 8, further comprising:

a base plate module configured to couple to the scanning device, the base plate module defining at least a first alignment channel.

10. (NEW) The system of claim 9, wherein the base plate module is configured to receive the first plate module and the first alignment channel is configured to receive at least a first of the alignment spheres of the first plate module.

11. (NEW) The system of claim 10, wherein the first alignment channel is configured to receive at least the first and a second of the alignment spheres of the first plate module.
12. (NEW) The system of claim 10, wherein the base plate module is configured to receive the first plate module when the first plate module and the second plate module are coupled together to form the combined apparatus.
13. (NEW) The system of claim 9, wherein the base plate module is configured to receive the second plate module and the first alignment channel is configured to receive at least a first of the alignment spheres of the second plate module.
14. (NEW) The system of claim 9, wherein the base plate module also defines a second alignment channel orthogonal to the first alignment channel.
15. (NEW) The system of claim 14, wherein the first plate module includes first and second alignment spheres arranged to cooperatively mate with the first alignment channel and the first plate module further includes a third alignment sphere arranged to cooperatively mate with the second alignment channel to position the first plate module at a known orientation.
16. (NEW) The system of claim 8, wherein the first dentition of the patient represents an upper set of teeth of the patient.
17. (NEW) The system of claim 8, wherein the second dentition of the patient represents a lower set of teeth of the patient.
18. (NEW) The system of claim 8, wherein the first physical model includes from at least one member of the group consisting of a plaster mold, a wax mold, and a plastic mold.
19. (NEW) The system of claim 8, wherein the alignment spheres of the first plate module are arranged within a common plane.

20. (NEW) A method comprising:

arranging a first physical model on a scanning device, the first physical model associated with a first alignment sphere, a second alignment sphere, and a third alignment sphere;

scanning a surface of the first physical model along a first scan line to find an edge of the first physical model at a first edge point;

scanning the surface of the first physical model along a second scan line to find the edge of the first physical model at a second edge point, the second scan line being spaced a distance from the first scan line;

determining a first vector crossing the first edge point and the second edge point, the first vector having a first direction;

locating the first alignment sphere at a first location , the first location being located along the first vector; and

scanning the first alignment sphere to obtain positional data.

21. (NEW) The method of claim 20, further comprising:

locating the second alignment sphere based on the first vector and the location of the first alignment sphere.

22. (NEW) The method of claim 20, further comprising:

locating the third alignment sphere based on at least the first vector and the location of the first alignment sphere.